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ADVERTISING INDEX, PAGE 33

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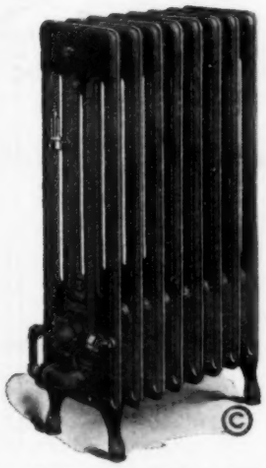

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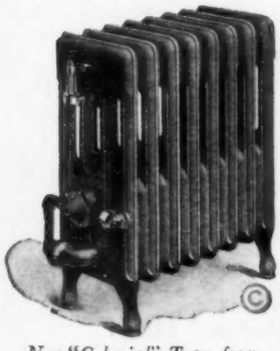

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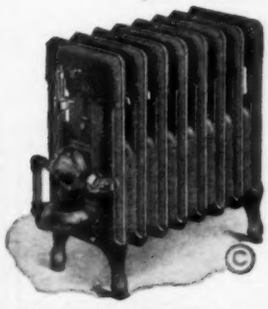

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American Gas Journal

SIXTY-THIRD YEAR

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Grid Condenser Design

CERTAIN NEGLECTED FUNDAMENTALS INDICATED. IMPORTANT FEATURES IN CONDENSER DESIGN DISCUSSED

O. C. Clisham

The cheapness, compactness, economy and reliability of the grid condenser is winnig it more friends every day in gas plants, as its continual replacement of its multitubular predecessor abundantly testifies. In some instances, however, the testimony would be somewhat more convincing if the peculiarities distinguishing the grid type were incorporated a little more evidently into its design. Notwithstanding the published material on this subject, and the growing number of successfully operating units, some installations, fairly numerous and contemporary, indicate strongly that the standards of dimensional proportion obtained from experience with tubular condensers are still being applied uncritically, in some quarters, to the design of grid apparatus. For this reason further contribution to this subject, emphasizing certain fundamental, even obvious, aspects of the grid condenser, somewhat taken for granted in previous articles, may prove to be not wholly without value. In this case familiarity with its general mechanical arrangement will be assumed.

Difference Between Grid and Tubular Types

Doubtless the most fundamental difference between grid and tubular type is that in the former the cooling liquid is introduced into direct contact with the gas, whereas in the latter it remains separated from it by an impervious metallic wall. Consequently the liquid must, in the first case, travel vertically downward over the grids. (The consequences of attempting to bring the cooling medium in at the bottom and out at the top, as is done in a tubular condenser, need hardly be suggested.) The cooling liquid is retained in contact with the gas as long as possible, in a given shell, by interposing wooden grids, with their capillary, water-holding surfaces in its path. (This important function of the grids seems to be overlooked not infrequently, the designer being exclusively concerned with grid surface area. If that were the sole consideration, the probabilities are that it would pay to go to thin aluminum slats.) Nevertheless, the fall of liquid, though delayed, can not be indefinitely suspended, and it has been found that with a design of grids quite generally used (¼x6" boards with ½" spacers) if less than one and one-half gallons per minute of liquid is sprayed for each square foot of shell cross-section that it drops through several feet of grids before spreading uniformly over the entire cross-section, so that much of the gas misses contact with the liquid at the top of the condenser. In fact, two g. p. m. per sq. ft. cross-section is a safer minimum, if all danger of naphthalene and pitch stoppage is to be avoided.

Now it is just this necessity for a minimum circulation of cooling liquid which has proved to be the nigger in the woodpile in the more flagrant cases of uneconomical design. The bearing on design of this basic peculiarity of grid-type condensers will readily appear if it be considered in connection with a few self-evident facts.

In the first place the operation of any condenser, as gas men use that term, depends for its action upon the transfer of heat from gas to cooling liquid, and its cooling capacity is completely determined by the rate of supply of cooling liquid and the temperature rise which this can be made to undergo. Other conditions remaining constant, the maximum heat absorption by a given amount of cooling medium, or conversely, the minimum amount of cooling medium required for a given heat absorption (the more usual problem) is realized when the medium enters the apparatus at the lowest, and leaves at the highest possible temperature. Since artificial refrigeration is seldom available or economical to use on gas plants, the lower limit is practically always determined by the local water supply. Cooling-water economy then becomes a question of bringing the cooling medium, before leaving the condenser, as near as possible to the temperature of the entering gas.

In the second place, the gas being cooled is the sole source of the heat which is being transferred to the liquid being warmed. Hence it depends upon the relation between how much gas is coming up through the grids of a direct contact condenser and how much cooling liquid is trickling down over them as to whether there is (1) not enough, (2) just enough, or (3) more than enough heat available to raise the temperature of the cooling liquid to that of the entering gas.

Conditions (2)and (3), being practically never actually encountered, may be dismissed with a theoretical appreciation. Condition (2) is evidently the theoretical optimum state, just on the dividing line between (1) and (3), and could be maintained only with absolutely unvarying gas production and liquid circulation. Condition (3) would represent a deficiency

of cooling liquid. Owing to the facts that absolutely uniform conditions and perfect heat transfer never prevail in practice. Condition (1) is the field we are obliged to work in, but it should be the designer's aim to keep as closely as possible to condition (2) without running the danger of getting into condition (3). We are now in a position to ask ourselves how all this may be accomplished.

Condition (1) amounts to saying that, even with perfect heat transfer between gas and liquid, the temperature of the latter could never attain that of the former, and the liquid is not accomplishing the heat absorption of which it is capable. To improve this condition we would have to either increase the gas rate or decrease the liquid rate, and in a gas works it would usually be the second method. Is there, then, any reason peculiar to grid construction why we may not proceed to diminish the liquid circulation, as we would do with a tubular condenser, until it will just remove the required amount of heat in rising to the temperature of the entering gas?

Reducing the Circulation in Grid Condensers

If, in attempting to get a higher exit liquid temperature, we reduce the circulation materially below two gallons per minute per square foot of cross-sectional shell area, it should now be fairly plain that we are extremely likely to get into trouble with the exit gas temperature, and eventually into back-pressure difficulties.

The next question is, granting all this, what does it have to do with grid condenser design? A numerical illustration may perhaps help. Suppose the attempt is made to cool gas at the rate of two million cubic feet per twenty-four hours, from 160 deg. F., saturated, to 110 deg. F., with cooling water at 60 deg. F., in a grid condenser eight feet in diameter, and tall enough to give perfect heat transfer. Calculation shows that fifty gallons per minute is enough cooling liquid circulation to do this job, from the thermal standpoint. In order to keep the grids uniformly flooded, however, we find that at least seventy-five gallons per minute are needed, and that one hundred is much safer.

In giving the obvious conclusion of the preceding paragraph, we state the fundamental fault of practically every poorly designed grid condenser extant, i. e., the cross-section is too large for the job, from the standpoint of thermal efficiency.

The thermal inefficiency of excessive cross-section works out all along the line. Refer again to the numerical case. The cooling liquid circulation is seen to be twice as large as is thermally necessary. This constitutes a waste of cooling water, not only when coils are used, but even in the rare case where cooling water can be used directly on the grids without creating a nuisance. In the immense majority of cases the familiar closed recirculation with coils prevails, and here the circulating pump capacity would be double that necessary with an economical shell diameter. Since the cooling liquor has but half the available temperature rise, there is less temperature-difference between the liquor inside and the water outside the coils, which, combined with the doubled circulation rate, necessitates twice the otherwise needful coil investment. If we were to attempt to offset these effects of excess cross-section by reducing the circulation it would not spread over the upper portion of the grids, and we would be unable to cool the gas to the desired exit temperature. Whereupon we might, if we were running the works, with precious little time to theorize, develop a chronic prejudice against the grid type's efficiency.

To correct this condition of too much cross-section let us assume that we have at our disposal a stock of condenser shells and grids of any desired diameter. Is there anything to prevent us from choosing one in which the minimum circulation that is necessary from the thermal standpoint will not be less than two gallons per minute per square foot of cross-section? Only the possibility of obtaining excessive back pressure through the grids, or such high gas velocity or liquid circulation through them that the liquid "hangs up" and instead of flowing to the bottom of the condenser, is carried out via the gas outlet pipe in large quantities. Fortunately it so happens, with the type of grids generally used, and under conditions of gas-heat-burden encountered in gas works, that neither of these restrictive limits encroach upon our choice of an economical cross-section.

It is to be emphasized that in all this discussion of cross-section no mention has been made of height, but only of gas volume and liquid circulation. The case may be summarized as follows: The cross-section of a grid condenser should be so proportioned to the rate of gas to be handled that the heat evolved by the gas, in cooling to the desired exit temperature, is but slightly less than the heat required to warm the liquid circulation, necessary for absorbing the evolved heat under these conditions, and which must also be not less than two gallons per minute per square foot cross-section, from the temperature of the cooling water to the temperature of the incoming gas. The height is sufficient, depending upon the surface-volume ratio of the particular grids used, when, using the minimum circulation required to remove the heat, the gas has the desired exit temperature.

Grid Design Controlled by Practical Considerations

These general principles were the basis of the pioneer work in this field. Before they could be embodied in working design figures, the material and configuration of the grids had to be settled upon. The question of grid design is as yet largely, if not wholly, controlled by practical considerations, rather than that of obtaining the maximum superficial area per unit volume. The cheapness, lightness and capillary of wood, combined with excellent durability when once carefully installed, have enabled it to hold its own against theoretically more efficient material such as aluminum. The most widely approved grid just now is made up of ¼x6" cypress, basswood, or yellow pine boards, with ½" spacers, bolted into bundles with ⅞" outside boards, the ¼" slats having waved or fluted bottoms to prevent the liquid running off one end. This design represents about the maximum surface-volume ratio compatible with structural strength, back-pressure and economical

sawing from standard timber. Thinner slats would unquestionably warp and touch each other, and narrower spacing would probably increase the gas velocity to the point of "hanging up" the cooling liquid, although actual data on that point has never been made public.

On the basis of this design of grids, and the general principles governing grid condenser design, the following working figures have been found to give fairly good thermal economy and to permit close control of the exit gas temperature, for the conditions prevailing in coal gas primary condensation: For shell cross-section allow five square feet per million cubic feet of gas per day, the height being sufficient to contain from eighteen to twenty vertical feet of grids. This allows liquor circulations as high as fifteen g. p. m. per square foot of cross-section without trouble from back pressure or hanging up of liquor, and for primary condensation the necessary circulation will be from five to ten g. p. m. per sq. ft. cross-section. With the grid height just given and the circulation as generally used, i. e., a little in excess of what is theoretically necessary, the cooling liquor is commonly heated to within fifteen or twenty degrees of the incoming gas, and the desired exit gas temperature controlled with no difficulty at all. Instead of designing the secondary condenser strictly in accordance with the general principles previously worked out for maximum economy, it is customarily made a duplicate of the primary so as to constitute a spare for it.

(It is to be noted that this results in coal gas grid condensers for all capacities being of uniform height, the diameter alone varying with the rate of gas to be handled. Since the usual water gas condenser operates between nearly the same temperature limits as a coal gas primary, this statement can hold for practically all grid condensers.)

In case anything unheard of happened to the primary condenser, the full amount of primary condensation could still be carried out in the secondary by giving it the full primary circulation. If only two motor-driven circulating pumps are installed this necessitates both being the same size and equal to the needs of the primary, but an installation at once safer and more economical includes a steam-driven spare pump, which can be varied to suit either circulation, and which enables the motor-driven pumps to be of different capacities, each suited to the particular task. (For the primary, seven to eight g. p. m. per sq. ft. cross-section, for the secondary, two to three g. p m. per sq. ft.)

From the purely thermal point of view the division into primary and secondary stages results in a loss of efficiency, as R. B. Rowley showed in his paper, "The Doherty Washer Cooler as a Condenser," before the Michigan Gas Association in 1915, but the operating advantages of two stage condensation are sufficient to carry the day on gas plants of ordinary size. Besides the chief benefit of having a spare condenser, it enables the use of tar extractors at the most suitable temperature and fits in more nicely in the general scheme of ammonia recovery, enabling the production of stronger weak liquor by the plant as a whole.

Water Gas Condensation

It is to be noted that water gas condensation presents a peculiar problem in that some works are so cramped for gas storage that it pays to cool the gas before entering the relief holder. As soon as it is realized that gas at 180 deg. F., saturated, occupies practically twice the volume it does at 100 deg. F., saturated, it becomes fairly obvious that a condenser before the relief holder is as good as a duplicate relief holder, that is for storage purposes. In a manner of speaking, we obtain an additional relief holder at the differential cost of a larger and less efficient condenser, if we place it before instead of after the holder. The momentary variation of a water gas set's production is so extreme compared to that of any coal gas process, that the location of a grid condenser in this position would certainly seem offhand to necessitate a cross-section based upon peak conditions. This would result in poor thermal economy, according to our previous conclusions regarding cross-section. It seems highly probable, however, considering the high gas loads per unit cross-section occasionally obtained on some large coke plants, without serious difficulty from back pressure, that some designers of grid condensers for water gas have been unduly afraid of back pressure, and could safely approach the requirements of an average gas load a great deal closer than is typical of most existing installations. The crying need just here is a series of authoritative tests to determine quantitatively the following factors: (1) The variation of gas temperature and rate of production during the run; (2) The variation of back pressure per vertical foot of grids, of various designs, with the gas load per square foot of shell cross-section; (3) The variation of gas and liquor temperatures in the scrubber during the cycle; (4) The amount of lag and the general effectiveness of thermostatic control of liquor circulation and cooling water supply. With these factors definitely known, design in this field could be fairly exact, and as economical as the facts allow, instead of a furtive groping and playing safe.

Cooling Coils

The question of cooling coils is chiefly a practical one. In spite of the superior thermal efficiency of double pipe coils, their cost bars them out except in rare cases where a refrigerating medium which must be conserved, such as brine, is used. Moreover, for primary condensers without excessive cross-section, from which the cooling liquor may enter the coils at 140 deg. F. or better, the single pipe coils effect considerable cooling through evaporation of a portion of the cooling water. Since the evaporation of water consumes about ten or more times as much heat as warming it, this process results in some saving of cooling water which partly offsets the generally superior efficiency of the double coils, due to their using the cooling water at higher velocity and completely counter-current to the liquor.

Single pipe coils made up of full lengths of two-inch pipe or tubing have been almost universally adopted as being about the smallest practical diameter for keeping clean and avoiding excessive friction, which, together with structural considerations, limits the height of a single stack to about thirty pipes. Through such a stack not more than about twenty-

five to thirty gallons per minute can be circulated without undue friction loss, which increases with the square of the velocity according to the familiar hydraulic formula. Whenever possible, however, the circulation per stack should be kept up to this figure, in order to use the minimum number of stacks for a given total circulation, since it works out that the cooling water requirement is not so materially different in either case as to warrant reducing the liquor velocity in the coils and using more stacks. Another reason, beside saving investment, for maintaining about this circulation per stack, is that if the liquor velocity in the coils drops too low a thermal circulation is apt to be set up in a few coils that happen to be a little warmer than the rest, this thermal circulation being sufficient to carry all that the pump is sending to the entire bank of coils. Consequently the velocity in all the other coils drops to zero and the warm coils do all the work, and the cold sluggish ones can even freeze up in winter.

The factor which necessitates low liquor velocity in the coils is high cooling water temperature. For the exact design of cooling installations one should be provided with a set of curves, based on actual tests of a standard single stack at several standard liquor velocities, giving the number of degrees drop suffered by the liquor as a function of the difference in temperature between the liquor leaving the coil and the cooling water in the distributing trough. Knowing the cooling water temperature, and how close to this it is necessary to bring the liquor, a glance at such a set of curves would show just how many standard stacks would be necessary to handle a given circulation of liquor. If the cooling water temperature were so high that a liquor-coil velocity of less than ten gallons per minute per stack is indicated it would be well to consider the possibility of connecting half of the coils up in series with the other half, thus doubling the velocity, especially if freezing weather is in prospect during winter. Unfortunately the combination of cold winters and warm cooling water in summer is not at all rare, especially where rivers are the source of supply.

Manufacture of Dry Color with Industrial Gas*

By Guy F. Wetzel, Industrial Gas Sales Engineer

A few months ago, when I first suggested the use of industrial gas in the manufacture of dry color, a certain prominent manufacturer nearly succeeded in laughing me out of his office. Most every industrial gas engineer, I dare say, can tell of similar experiences. Whenever it is suggested that industrial gas be adapted to a new use, whether the process be old or new, you can be pretty sure that there will be plenty of people claiming that it cannot be done. The engineers of the United States Army have adopted a slogan that well applies at this point, "It Can't Be Done, but Here It Is." Scarcely a month passed by before we received a check in full payment for our gas fired dry color equipment. The manufacturer who laughed is now using 200,000 cubic feet of gas every month and his production schedule has been increased thereby fifty per cent.

What Is Dry Color?

Dry color is a powdered pigment and is used as the color basis for printer's ink, calcimine, oil paint, water paint, stains and enamels. By experiment it has been found that when certain chemicals some of which are by-products from coke ovens, are put in solution, an entirely new substance precipitates out of the mixture and forms in the bottom of the tank, such as mud does when dirty water is allowed to stand still. This mud thus collected is the dry color. The liquids are drained off after the precipitation has ceased and the mud put into filter presses.

Water Filtered Out

The filter press simply squeezes out any residual water and forms the color into cakes 20x20x1". These cakes are put into wire bottom trays. Thirty-five trays are put on a roller truck. Twenty-four trucks are placed in a dryer for a period of from 12 to 18 hours. The temperature in the dryer is maintained thermostatically at 140° F. After the drying process, the cakes are removed and easily pulverized in mills suitable for the manufacture of ink, paint, and so forth.

Industrial Gas Supplies Heat for Drying

The dryers are supplied with 2,000 cubic feet of air at 140° F every hour from two gas fired air heaters (see insert of gas fired air heater). The fumes from the gas are mixed with the air heated and delivered to the dryer.

Proof of Purity of Our Gas

Nearly all dry colors have an affinity for sulphur resulting in absolute ruin. Accordingly, color manufacturers exert great pains in keeping sulphur fumes away from their processes. It is interesting to note that one manufacturer allows nearly a quarter of a million cubic feet of gas to come in contact with his color process every month, without ever noticing any ill effects or traces of sulphur. This is particularly interesting and certainly sufficient proof of the high efficiency of our gas scrubbers and entire purifying plants.

Ideal Control (3 Factors of Safety)

The temperature of this air heated dryer is maintained within one-half of a degree, plus or minus, of 140° F.

1. A small but ingenious device actuates a gas valve, closing it when the temperature goes above 140 and opening it when the temperature goes below.
2. Another small device entirely shuts off the air heater should the temperature ever exceed 140½ degrees.
3. In the event the gas is extinguished, a third device makes it impossible for the thermostatic control (1) to open the gas valve.

*Reprint from June 1 issue of Peoples Gas Club News.

Advertising and Customer Ownership of Public Utilities

HOW ADVERTISING AIDS IN BRINGING OUT HIDDEN CAPITAL AND RENDERING IT PRODUCTIVE OF PROFIT BY INVESTMENT IN PUBLIC UTILITIES

William H. Hodge

William H. Hodge, Byllesby Engineering and Management Corporation

The following is an excerpt from an address before the Public Utilities Advertising Association at the Convention of the Associated Advertising Clubs of the World, Atlantic City, June 4, 1923:

It brings out one of the many functions that advertising does and can perform for the public utility industry. The participation of the general public in public utility ownership can result only to the general advantage of the industry. The ownership of public utiity and particularly gas company stock by the general public will serve to build up a community interest in the company that will act as a bulwark against the unfair attacks of governmental bodies.

Customer ownership advertising is a newcomer. It did not exist prior to 1914. It has grown rapidly and now represents a very considerable annual expenditure in the newspapers, direct-mail efforts, outdoor advertising, posters, window displays—practically all forms of approved advertising expression.

During the past ten years the utilities of the United States have been demonstrating how they can keep up with national development, render vastly more and better service and at the same time hold down selling costs far below the scale of advance in the prices of commodities, fuel, wages, rents, railway transportation—the whole list of other modern necessities. Many factors have made such a record possible and, for several years, one of the outstanding factors has been customer ownership financing.

The necessity of being monopolies made the utilities unpopular. Radicals advocated municipal or state ownership and operation. State and city regulation came about as an alternative to this departure from American standards. Regulation tempered hostility, but by no means eliminated the hazards of political attack. The problem of public relations became, or rather always has been, problem number one in the public utility business. If the public declines to let you do business or to do business in a way that will yield a reasonable profit, you simply cannot do business in the U. S. A.

These industries deal in service; not merchandise. They do not build power plants, gas works, and telephone exchanges to sell these things and take a profit. Their expensive equipments are for the purpose of rendering service as cheaply and as efficiently as possible.

Customer Ownership Growing

In 1914 a large utility organization decided to turn to its customers—the citizens supplied with utility services—for the needed equity investment funds. This company went direct to the people, in a broad and systematic way, employing no banking intermediary. Investments in small amounts were solicited. Easy payment terms were offered. The efforts were rewarded with success.

It worked so well that at present a considerable and growing number of companies, including the very largest, sell their stock direct to the public with ever-increasing good results.

Today not far from 2,000,000 Americans, including both stock and bondholders, have a direct financial interest in one or more of their utility companies. It is believed that at least 350,000 citizens will be added to this number as stockholders during the present year.

One prominent group of electric and gas companies has obtained 40 per cent of new construction capital by customer ownership financing during the past eight years. Several large utility companies now have more than 50,000 shareholders each. The telephone industry is said to enjoy a shareholders' list aggregating upward of a half million. During the present year it is thought that from $300,000,000 to $400,000,000 will be realized by the entire group of utility industries from customer ownership financing. For each dollar of equity or junior financing accomplished it is possible ordinarily to raise two dollars by bond, or major advertising. Equity financing is the key.

Public Good Will Gained

If one out of every ten or twelve families in a community owns stock in a utility company serving them it is pretty safe to say that the company will not be unfairly treated by governmental bodies. A percentage of the population always holds the balance of voting power in electing men to public office. No politician can successfully antagonize a considerable number of voters, in every walk of life, who have hard-earned money invested and look forward to receiving substantial cash dividends every three months. If a utility becomes arrogant and hoggish, its customer-shareholders will not save it from being properly penalized. It is bound to pay for its foolishness, but for the utility that plays the game squarely, its home shareholders are a perfect defense against unfair attacks.

Advertising is inseparable from the development of customer ownership. The first thing customer ownership tries to do is to reach and interest the people; not the capitalist and the investor of considerable sums, but the workers—the earners of salaries and wages, the small merchant, the professional classes, the retired person of modest means—in brief, the great majority.

The average sale to customer shareholders, considering both cash and partial-payment transactions, is about seven shares, or $700. This is far less than the average sale of an investment banking house dealing in investment securities.

Customer Ownership Advertising Large

Customer ownership advertising has greatly increased the amount spent annually for advertising by many companies. To illustrate, the following classified expenditures of a considerable group of utility properties which made gross sales of $10,600,000, par value, of stock in 1922 are given.

These properties, which are widely scattered, and serve something like two and one-fourth million people, spent last year about $230,000 in all kinds of advertising (not including booklets and similar literature):

For newspaper space:		
Securities (customer ownership)	$87,730	
Commercial (service and appliances)	71,619	
Good-Will Building	18,528	
Regarding changes in rates	2,422	$180,299
For other kinds of advertising:		
Direct Mail (securities)	$40,101	
Direct Mail (comercial)	2,565	
Painted Bulletin Boards and Posters	6,100	
Window Display	1,050	
Moving Pictures	350	
Street Cars	150	50,316
		$230,615

Of this total the following was on account of customer ownership expenditures:

Newspaper Space	$87,730	
Direct Mail	40,101	
Painted Bulletin Boards and Posters	6,100	
Window Display	500	$134,431

From these figures it appears that 58 per cent of the total advertising bill for the year went to customer ownership financing. Based on the sale of $10,600,000 par value of stock, it would mean advertising expenses of 1¼ per cent or $1.26 per share. The general results can be said to be highly satisfactory, as in all respects these companies enjoyed the best year in their history.

The advertising expenditures of the group of companies in question were something greater than six-tenths of one per cent of the annual gross earnings. Without customer ownership advertising they would have been less than one-half of this seemingly small percentage.

Six-tenths of one per cent of the gross may seem small when compared with the amounts spent for advertising merchandise, but in reality it is not, because the basis of capital turnover is not the same. If these utilities turned their capital five times a year, instead of once in five years, clearing a profit each time, a fair comparison of the advertising percentage could be made. Multiply six-tenths of one per cent by five and you have 3 per cent, or the figure which might possibly be used for comparison with the advertising percentages of mercantile and manufacturing enterprises.

Other utility organizations spent less and others more, in proportion to their size, for customer ownership advertising in 1922. It is not possible to obtain even an estimate of the total figures, but it may have exceeded $2,500,000. The expenditure saved the utilities much more than this amount in the cost of financing, enabled them to take on large amounts of new business and serve large numbers of additional customers, and was a primary means of adding several thousand shareholders to their lists of customer partners.

A utility company in healthy condition is not gagged by any "these statistics are obtained from sources which we believe to be reliable, but are not guaranteed" tommyrot. It should know that its statements about itself are true. It has the right, in describing its own securities, to say what it honestly believes about them, the safety of principal and yield and their marketability, in plain and enthusiastic language. It can go as far as it likes in telling the world about itself as long as it sticks to the truth.

Objects of Customer Ownership Advertising

So customer ownership advertising soon aimed at the following objects:

Sell the company, rather than the security issued.

Sell the idea of what the investor receives.

Sell the thrift idea and partial payment investing.

Sell the advantages of investing at home.

Sell the principles of safety and dependable return.

Sell the fundamentals of utility operation and financing.

Sell the thought of making inquiry of the company.

Here are comparative results of formal financial advertising announcements and effective customer ownership advertisement—the kind of copy that was used to launch customer ownership in 1914 and the kind used in 1919. In 1914 formal advertising in conjunction with direct mail produced about 200 inquiries leading to the sale of something like $200,000 of stock over a period of six months in a city of about 400,000. Five years later, in a city of 250,000, copy that did not contain a single numeral, price, yield or dollar mark (with direct-mail announcements equally vague) produced over 2,000 inquiries in thirty days, the immediate sale of more stock than it required six months to dispose of in the larger city, and later on much larger amounts.

Photographs, drawings, maps, charts—all are useful at different times in customer ownership copy. Simple diction, sincerity, frankness and the presentation of definite facts and truths—these make this kind of advertising interesting and compelling.

The critics of financial and customer ownership advertising, whose experience has been in commercial advertising lines—those who "see no difference in advertising an investment security from advertising anything else," are unsafe guides. They forget that a commodity or manufactured article can be seen, demonstrated, sampled, and that a bond or stock certificate is a piece of paper. The buyer must rely on mental processes solely in making his decision regarding an investment, unaided by his five physical senses. When he acts it is because of a single motive—confidence. And investment confidence is something arduously and painstakingly won, but which can be quickly destroyed.

If you announce a reduction of 25 per cent in the established price of a standardized, well-known product, you may have to call the police to keep your prospective buyers in order. On the other hand, if you were to announce a well-known, highly-thought-of investment security at 75 per cent of its prevailing market price, you might have to call the police

to handle the crowds of shareholders assembled to find out what had happened to their investment, and anxious to sell out before another price break occurred.

Hidden Capital Rendered Productive

Customer ownership advertising has brought out of non-productive idleness a great deal of money, hidden under carpets, in old tin cans and buried in back yards. There are instances that seem without number which could be cited. As much as $7,000 in small denomination bank notes has been carried into a utility company's office and invested in the company's stock by an individual who trusted not banks, lawyers, courts nor U. S. Government bonds. Many believe that customer ownership advertising has put more hoarded gold and greenbacks into useful investment than any other corporate or financial publicity of recent years.

Advertising that keeps the people's money intact; that puts it to work providing additional public service needed for community and industrial expansion and for the comfort and economy of families; that causes people to learn how to save and wisely invest, and that makes it possible to distribute dividends at home among those of small means is, I am sure, a kind of advertising that we can point to and say that its influence is altogether good.

Removing Dust from Water-Gas Blast Gas

GENERAL PRINCIPLES DISCUSSED—CENTRIFUGAL DUST ARRESTER, WASHER TYPE OF DUST COLLECTOR AND ELECTRICAL PRECIPITATOR DESCRIBED

A. M. Beebe

The following article is the official report of the committee on "Elimination of Dust from Water Gas Blast Gases," which was read before the Gas Section of the Empire Gas and Electric Association, in convention at Albany, N. Y., May 4, 1923.

The report outlines the three general methods of dust arresting or precipitation and goes into considerable detail in describing a typical electrical dust precipitating installation, giving operating figures and results. Removal of dust from gases is an important technical problem and its significance from a gas standpoint is becoming of greater importance.

The elimination of dust from the blast gases of water gas machines has been a problem that has confronted many companies in the past, who were situated in districts where such a nuisance was a source of complaint. As time goes on and districts adjacent to gas works are becoming more and more densely populated, this problem is becoming increasingly important.

The purpose of the committee in drawing up this paper was to investigate and report what has already been done in the plants where this problem has been attacked and, further, if possible, to investigate other possible solutions as yet untried which might have a bearing on the solution of this problem.
to be three general methods of attack:

In attempting to solve this problem there appears to be three general methods of attack:

(a) By passing the gases through various types of apparatus, where by means of centrifugal action the heavier particles are precipitated.

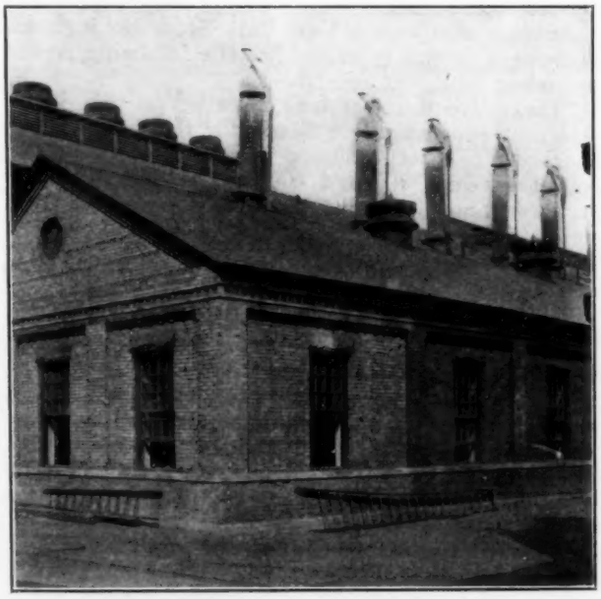
(b) By washing the gases with various types of washing equipment in order to extract the dust particles.

(c) By electrical precipitation.

Plants were investigated where types of equipment had been installed and an effort made to draw some sort of a comparison. Determination of the efficiency of dust removal by such equipment is a rather difficult problem, and is considerably beyond the scope of this committee. Below will be given, however, all the available data on these various methods that the committee was able to gather from plants where the different types of equipment were in operation.

Centrifugal Precipitation of Dust

(1) The precipitation of dust by centrifugal action seems to be the method that has been by far most generally used, and, without doubt, it is the cheapest method, both in first cost and operating labor. The efficiency of dust removal, however, is probably not so high as the other types, at least for the types of equipment thus far designed. Equipment of this class requires almost no operating expense whatever, which is not true of the other two types.



Centrifugal Dust Precipitation Installation

One plant in the Middle West did considerable experimenting and finally adopted arresters of the type shown in the photograph, and has the following report to make on its operation:

"About five years ago we found ourselves obliged to work out some plan whereby the breeze issuing from the gas thermometer stacks at one of our stations would be collected. This became necessary on account of complaints made in the vicinity of the plant and also by the city Board of Health. After a great deal of experimenting, conical-shaped arresters were installed on a number of the machines and their performance has been very successful, no further complaints having been received.

On the operating floor there is a container for the storage of the breeze which is emptied at regular intervals and in this way definite data as to the quantity of breeze collected is obtainable. The breeze collectors were installed on twelve gas generator sets at one station ranging in size from 8 ft. 6 in. to 12 ft. in diameter. The method of testing the apparatus as to its efficiency was done by several men spreading wet paper on the ground in the territory adjacent to the works and carefully observing for a number of hours to see if any particles of breeze were deposited. At the same time careful data was kept on the amount of breeze taken from the containers every twenty-four hours and this ranged from 235 to 250 pounds per machine. You can readily see that at this rate and with a schedule of seven or eight machines running, we were sending out into the surrounding neighborhood approximately one ton of breeze every twenty-four hours. An added feature in the use of these collectors was that a material improvement was noted in the housekeeping conditions of our own plant. I might also add that the tests were taken under a low blast pressure condition averaging approximately 18 inches at the generator. We have no doubt that with the more modern sets running at a blast pressure of from 30 to 50 inches, the amount of breeze removed will exceed the figures given above."

Another company in New York State has installed equipment of this type and has the following report to make:

"These two dust catchers installed on two 8.6 ft. sets cost approximately $4,600 for the two. While operating one set we have been able to catch and collect between 300 and 400 lbs. of fine screening per day. Since installing them we have had no complaint from any of the people in the near vicinity of the plant."

Washer Type Dust Arrester

(2) The washer type of dust arrester, at least to the committee knowledge, has not been as yet applied to any water gas blast gas problem. However, some of the large gas equipment manufacturing companies have designated various types of equipment. Unfortunately, the committee was unable to locate any plants where apparatus of this type was in use and hence can not give any operating testimonials. It might be said, however, that apparatus of this type has been used for cleansing other gases with complete success, notably producer gas.

It can be said, however, that on the new water gas plant now under construction by one of the companies of this State, that apparatus of this general type is to be installed. This plant will be in operation in the near future and by fall should be able to give some definite data as to how apparatus of this type functions in the solution of this problem.

Electrical Precipitation Method

(3) Electrical precipitation is a method of dust removal that has proved commercially successful in a great many other fields, and the makers of the equipment, as well as the committee, feel that there is no reason why such a system would not be equally successful on water gas blast gases. The manufacturers go so far as to be willing to guarantee results with a refund of purchase price if guaranteed results are not reached. The apparatus consists of a chamber through which the gases must pass, in which are suspended positive and negative electrodes. The plates are hung parallel to the direction of gas flow which are grounded and between the plates are strung the high voltage wire electrodes. These wires being maintained at a high voltage cause a precipitation of the dust on the grounded plates.

The electrical equipment consists of a small switchboard, synchronous motor, mechanical rectifier and transformer to produce the undirectional current at an operating voltage of approximately 3,000 volts. The potential is maintained on the precipitator or collector at a voltage at which there is a "corona" or silent electrical discharge from "wire" to "plate" and below the point where there would be a disruptive or arc discharge between "wire" and "plate."

The electrical precipitator is built in units so that at intervals, determined by amount of dust collected on the plates, the power and the flow of air can be cut off from one unit automatically and the plates cleaned. The dust or material is collected in hoppers below and drawn off as desired by means of a screw conveyor. The automatic damper control, power switching and electrode cleaning devices are interlocked and synchronized.

Operating Features of the Precipitators

Where the problem is one of a dust nuisance, the efficiency of operation is adjusted to that necessary to reduce the nuisance to a minimum, and consistent with economy of operation. For example, this may be only 90 per cent dust removal, and consequently fewer units are needed for a specific volume treated than if the recovery were 98 per cent or more, which would be the case if the recovered material were of value. The efficiency is independent of the dust content of the gases.

The precipitators may be operated up to 500° F. This latter feature would render the apparatus useless for water gas blast gases, but this can be easily controlled by placing a spray of water just ahead of the precipitator. The guarantee of the manufacturers reads: For a minimum size installation of two standard units of the size and type shown, guaranteed ratings are as follows:

98-99% efficiency—3,000-4,000 cu. ft. per min.
95% efficiency—5,000-6,000 cu. ft. per min.
90% efficiency—10,000 cu. ft. per min.

For larger volumes treated, additional units may be added either in series, parallel or series parallel. The electrical power consumption of two standard units is approximately 1.5 K. W. Only occasional inspection of the electrical equipment is required, and periodically a small amount of labor is required to control the automatic operating devices. There is very little wear on the precipitator parts from the abrasive action of fine dusts. The depreciation on the equipment as a whole is small. The "back pressure" on this apparatus is almost nil and it is quite uniform.

Operating Costs

In order to get some idea of costs for operating it was proposed to put such equipment on (2) 12-foot water gas machines of 5,000,000 cu. ft. capacity each, and the equipment suggested was as follows: The calculations are based on a volume of 60,000 cubic feet per minute at a temperature of approximately 500° F., this being the volume and temperature at which we would treat these waste gases for the removal of the suspended matter. It is understood that it is possible to operate the two water gas sets in tandem, giving practically a continuous flow of gas for treatment, although such a volume given intermittently would not prevent satisfactory operation of apparatus.

It is understood that these water gas sets produce a total of approximately 5,000,000 cubic feet of gas per twenty-four hours, measured at normal temperature pressure (60° F., 30" hg.). To clean these waste gases for the removal of better than 90% of the suspended solids, calculations show that two precipitating units of two sections each would be necessary; these precipitator units having fifteen ducts or channels in parallel and being provided with hopper bottoms, constructed entirely of steel, supported on concrete foundations, requiring ground space of approximately twenty feet by thirty feet with approximately fifteen feet head room. In addition to the precipitators or collecting chambers there would also be required two sets of electrical equipment consisting of the necessary synchronous motors, mechanical rectifiers, high voltage transformers, substation insulators, switchboard controls and necessary guard screens and accessories. This equipment requiring a ground space of approximately sixteen feet square with approximately twelve feet head room. This equipment may be put in a separate substation building or housed in an adjacent building.

This installation could be operated with a back pressure through the same of something less than .5 of an inch of water, probably not exceeding one-quarter of an inch of water, would operate continuously with occasional cleaning of the electrodes. The power consumption would not exceed twenty kilowatts on the two section units or twenty-five kilowatts on the three section units, this power consumption being the total for both units.

The operating labor on equipment of this class is almost nothing. A slight attention every two hours, which can usually be done by operating labor already at the plant is all that is necessary. The electrical consumption for a unit of this size will run about 15 K. W. H.

The committee investigated one plant where this apparatus was used to take silver dust from fumes going to a chimney, and the operator in charge said that their experience with it had been most satisfactory. Their main objection being that it ran so completely of itself that it is apt to become neglected. The manufacturers have realized this and have since instituted a semi-annual inspection of all their installations. This is in the nature of service and is included in the purchase price.

THE COAL SITUATION

One of the ways in which economy can be effected is by the use of gas and it would be well for the manufacturers of gas to bring out this point to users and prospective users. Gas is a combustible that is ready for instant use. It produces an intense clean heat; can be piped to any convenient place; can be stored in tanks for an indefinite period; can be used at any rate of speed, thereby rendering its use more economical, which is an important advantage it has over coal. Coal, when it is once ignited and is burning, cannot very well be saved without some loss.

Wherever gas can be economically substituted for coal it should be done because it not only will assist in reducing the cost of coal, but it will assist in conserving its supply.

PURIFICATION OF COKE BY STEAM

The United States Department of the Interior has issued a bulletin on the above subject which is of interest to gas men.

The bulletin describes a series of experiments performed in the laboratories for removing the sulphur from coke by the action of steam. The tests were conducted by atmospheric pressure with chunk size coke, and the results obtained were surprisingly good. The sulphur exists in the coke combined in elemental form, the combined sulphur, ferrous sulphide and ferrous sulphate. The free sulphur is now set of a solid solution with the coke.

It was found that at temperatures near the 500 degrees C., it was possible to oxidize the larger part of the ferrous sulphide in the coke to iron oxide and free sulphur without causing any appreciable oxidation of the coke itself. Thus the combined sulphur in Ohio coke was reduced from 1.38 to 0.72 per cent. The sulphur per cent in the state of a solid solution is not affected by the steam treatment and it is impossible to remove the sulphur completely by any of the methods that were tried. However, it is known that this sulphur is not very objectionable in the coke when used for metallurgical purposes. In an Illinois coke the percentage of sulphur was reduced from 0.62 to 0.28. Sulphur in a sample of case house coke from Philadelphia was reduced from 0.81 to 0.60.

The results mentioned above were obtained without the use of a vacuum and it is probable that if a vacuum were used the percentage would be reduced still further. An interesting feature of the process is that very little steam is required for carrying out, the consumption being only three grams of steam per gram of coke per hour. The process has not been worked out as yet on a commercial scale. This remains to be done.

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Distribution Problems of Mains, Meters and Services

MAIN BREAKS, ESCAPING GAS TROUBLES, METER CHANGES—VARIED DISTRIBUTION PROBLEMS OF READING GAS UTILITY DISCUSSED

William Naile, Consumers Gas Co.

The following paper was delivered before the meeting of the Eastern States Gas Conference in Philadelphia. It depicts a few of the problems encountered in the distribution system of the Consumer's Gas Co., which supplies the city of Reading and vicinity with gas.

The city of Reading and vicinity, with an estimated population of 132,000, is supplied with gas through approximately 133 miles of mains, ranging in size from 2 to 20 inches.

Three different pressures are used to deliver gas to the consumers. Low pressure supplies all of the city of Reading and the borough of Mt. Penn, located about two and one-half miles to the east. Intermediate pressure reinforces the low pressure through two (2) governors situated about one (1) mile from the works and about three-quarters of a mile apart. High pressure supplies the suburbs to the west of the city, across the Schuylkill River, and the borough of Birdsboro, about ten (10) miles to the southeast, and several small settlements along the line. This year several miles of new high pressure mains will be laid to supply rapidly growing developments to the west and north of the city.

Connected to these mains are 24,400 services of various sizes. All new low presure services are laid with 1¼" standard weight galvanized pipe, there are still in use a large number of old ¾" and 1" pipes laid years ago.

Most of the high pressure services are ¾", about 75 per cent of which are black pipe, and the remainder galvanized pipe. All new work will be laid with ¾" extra heavy galvanized pipe. At this time we have no services on the intermediate pressure system. Individual house governors are set for each consumer on the high pressure lines.

We have in service 24,500 meters, 22,000 of which are of the regular type and 2,500 of the prepayment type. Included in the above number are about 3,000 cast iron Sprague meters, purchased three or four years ago.

Distribution Problems Varied

The distribution problems arising in a system of this size are naturally varied and at times rather perplexing to solve. In the city proper we are troubled during the winter months with a large number of street leaks. Many of these leaks are caused by broken mains, principally 3" cast iron, although we have had a number of breaks on mains as large as 10". The cause of a large percentage of these breaks is settlement of old sewer main trenches and sewer lateral trenches. The sewer system was installed in most of the city's streets about fifteen years ago, and the backfilling was carelessly done by the contractors. The locating and repairing of these breaks proves sometimes to be difficult, particularly when the street has an improved paving laid on a good concrete base. Frequently it requires several hours to drive the necessary bar holes by hand before a place can be selected to make an opening.

We have had many cases of escaping gas from broken mains or services entering sewer pipes, underground conduit systems or water main trenches, and following them to finally enter cellars several squares from the scene of the break. Some of these breaks are hard to locate; it is necessary with these leaks to locate the carrying agent and then trace back by the direction of the flow of gas, if possible, by lifting manhole covers of this particular underground structure until it is determined approximately where to begin driving bar holes. Frequently an entire day will be spent hunting manhole covers when the ground is covered with snow.

Sometimes luck is with us on some of these searches. We have found several broken mains in sewer and conduit manholes, and temporary repairs have been made without opening the surface. Some of our mains on the narrow streets have been walled in these manholes and some pass right through the manholes.

Another source of trouble is when we get a leak on a main or service on a street with car tracks and our main is located under the rail, or just outside of it. Many of our old mains were laid a few feet from the center of the street to equalize the cost of the services to the consumers on either side of the street. Several years later the trolley tracks were placed in the center of the street, practically on top of our main. Escaping gas gets into the crushed stone of the roadbed and travels some distance through the stone. Barring for leaks under such conditions is difficult. Every bar hole will show gas and it frequently happens the smelling rod when put into the bottom of the bar hole will not show gas because the ground is moist or wet under the stone roadbed.

Construction work on new sewers and other underground structures in the streets must be watched carefully to prevent damage to our mains or services. We had one case on a sewer line where a point of a steam shovel opened a hole in a 2" high pressure main running at right angles to the sewer ditch. It is frequently necessary to have a man on the job constantly to protect our property by giving the locations of mains and services to the contractor as he goes along.

Trapped mains, due to settlement of filled in ground or old sewer trenches, can usually be corrected by the installation of drips or by relaying the trapped portion. Mains shut off by sudden filling up of drips by water are somewhat difficult at times to handle. The water usually enters the main system through a broken main or service and falls to the lowest point.

(Continued on Page 528)

As the Journal Views It

MISLEADING HEADLINES

"Gas Company Lacks $5.00." So reads the headline of a news item in a recent issue of one of the most prominent newspapers in New York City, a paper that is famous throughout the entire world for its thoroughness, accuracy and probity in reporting all the news that is fit to print and fit to read. If the person, perusing the paper and going over the news of the day hastily in the short time at his disposal, between leaving his home in the morning and reaching his office thirty or sixty minutes later, were interested enough to read further, he would obtain the enlightening and most important information of all that this "gas" company "was incorporated under the laws of Delaware to deal in gasoline, petroleum, crude oil and its products."

Hence it was not a gas company at all that was the subject of the news caption and item, and there was not the remotest connection between it and the gas company. But the harm had been done. The blow had been struck. For every false item of news that is circulated about a gas company news containing something derogatory or disparaging in one way or another must be considered harmful, injurious and capable of hurting the entire gas industry, if not immediately, at some time in the future. Rumor and gossip are deadly agents in creating impressions, a state of mind in the people at large, in causing them to acquire inaccurate, unjust, sub-conscious opinions and ideas which may lay hidden for a long time before they are dug out of their consciousness and used to condemn worthy, public-spirited enterprises that deserve far better treatment.

The average reader has very little time to read and absorb the voluminous morning or evening newspaper. The headlines and sub-captions catch his eye and they convey to him the import of the item. Even when he is specially interested and reads further, it is often that the first impression of the bold-face type headline is what remains as the final impression. Inaccuracies in headlines then means false impressions of the news item. It is not improbable that 95 per cent or more of the people who read the news caption, cited above, received and retained the impression that a "gas" company had become bankrupt, and if they read further and remarked in the sub-caption that this was a two and a half million dollar corporation they probably received an additional invidious impression that the bankrupt was dishonest as well as unfortunate.

The gas industry, being a public utility, is the public's concern, and any news about a gas company attracts public attention. So much false news and loose talk are disseminated by supposedly public spirited politicians and political bodies about public utility corporations in general, and gas companies in particular, that a false news headline or an entirely inaccurate piece of news in a disinterested newspaper serves to add a sort of unbiased substantiation to the arguments of political leaders that public utilities must be curbed and held in leash constantly.

The American Gas Association has recognized the danger that lies in the use of misleading headlines by newspapers and is preparing to make strong representations to the American Association of Newspaper Publishers to urge editors and headlines writers to use more care in composing news item captions. But it is also the duty of each and every gas company to watch closely for misleading headlines in daily papers which tend to give the reader a false idea about the gas companies. It is their duty not to refuse information, when they can properly give it, to reporters who are seeking to learn the facts about different occurrences that may take place in the plant or various happenings that are connected in one way or another with the gas industry. It is necessary for all, who are concerned with gas, to see that the utmost accuracy is used in spreading information regarding gas companies. It would be well for all to do what they can to prevent the indiscriminate use of the word "gas" so as to limit it purely to the manufactured product unless qualified by the proper adjective, such as "natural" gas.

The gas industry must realize that there is a sort of natural tendency on the part of the public to think ill of gas companies just as they do of all public utilities in general. It is therefore essential that serious attempts be made to stop the injurious practice of calling companies gas companies when they happen to manufacture or sell gasoline, petroleum, soda water, etc. The efforts of the gas company should be towards correcting inaccuracies in news items by themselves furnishing the correct news.

BUILDING PUBLIC GOOD WILL

The following is a quotation from the Goshen Democrat, Goshen, Ind. What is said of the Goshen Gas Company can be said of every other gas company in the country. It also shows that the editors of the daily papers are glad to use their columns to place the gas company in its proper position in the community it serves. Try it out on the editors in your city and see if it don't work:

"Public utilities, taken in the broad sense of the word, are constantly in the public eye, and oftentimes come in for a great amount of unearned disfavor. This is, of course, due largely to a misunderstanding of the conditions, and to the fact that they are dealing with thousands of people in all walks of life, among whom are many who do not understand, and some, unfortunately, who do not want to understand. However, taken as a general rule, public utilities are the most important feature of any community, being the largest institutions supplying the necessary requisites of light, heat, transportation, etc.

"The Goshen Gas Company is a striking example of the public utility operation of this locality, and today this organization is supplying the community with gas 24 hours in the day, without a second's delay. Their great storage tanks are kept constantly filled with artificial gas, which in turn is poured through mains to all parts of the city, and private homes, business houses, factories, and elsewhere, for consumption generally. They supply a great portion of the requirements of patrons with gas stoves, heaters and numerous other appliances, and serves their thousands of patrons faithfully day by day and hour by hour. Furthermore, it is not generally known that, quite the opposite from being a giant octopus that stretches out its arms and collects unearned toil from consumers, the Gas Company, like all other public utilities, is operated upon a basis of strictest economy. Rates are adjusted and fixed by the State Public Service Commission, which scarcely gives a thought to individuals, they have so many problems and propositions to consider. And the Gas Company has done far more in Goshen than the average institution of this kind has done, for they have worked toward perfect system and thorough service to everyone, giving the city and community surrounding an unlimited supply, and as a more thorough understanding comes to residents, the company and its great work is being more and more appreciated."

DISTRIBUTION PROBLEMS OF MAINS, METERS AND SERVICES

(Continued from Page 526)

We have had several sections of main and a few services damaged by electrolysis. One 4" high pressure main had to be renewed for about two hundred (200) feet where it passed the plant of the electric company. A 2" high pressure main had several large holes in it caused by stray current from the trolley rails near by, the bonding and joints of which were in very bad shape.

The renewing of trapped services is necessary work that must be done right along. Most of these services are trapped by old sewer trenches settling and carrying our pipe down as much as 9" in some cases. Main and service work ahead of proposed improved paving by the city must receive prompt attention so as to get our work done before we interfere with the contractor. All ¾" services and all trapped services are renewed to the curb.

Meter Change Work Heavy

Meter change work due to non-register meters and for five (5) year test has been extremely heavy for several years. During 1922 we changed almost 8,000 meters of various sizes for these two reasons. A large percentage of these meters have required new diaphragms when they were sent to the repair shop.

The old diaphragms removed have been hard and brittle, with large holes in them at several points and frequently have been covered on the bottom edge with a heavy tarry-like substance, which dries quickly and hardens like an enamel when exposed to the air. This deposit has also been noticed on the air side of the high pressure governor diaphragms, removed because the governor would not pass gas. Many meter valves have been struck so hard by this deposit that considerable force has been necessary to loosen them when tearing down the meters for repairs.

Most of the diaphragm trouble has been caused by improperly tanned leather used in the diaphragm and to gas which was not properly cooled and purified before leaving the works.

Prepayment meters are being replaced with regular meters as it becomes necessary to remove them for five (5) year test, or for any other reason. They are converted to regular meters by removing prepayment attachments in our own repair shop. No prepayment meters are being set except upon special request by the commercial department. This practice has been followed for the past several years.

In conclusion, I wish to call attention to the efficient co-operation of the members of the police department and the operators of the telephone exchanges in reporting gas leaks and other emergency calls promptly to the company. Many of these calls are reported to the shop foreman after the regular night man has gone off duty. In a number of instances policemen have been ordered to stay with us on the job until we released them.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company.		Maturity	June 14, 1923. Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	104	107
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	95½	96⅝
Brooklyn Union Gas Co.	First Lien & Ref 6s	May 1, 1947	103	104
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 6s	Feb. 1, 1949	103	103½
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	General 4½s	Jan. 1, 1935	91¾	92¼
New Amsterdam Gas Co.	First Consol. 5s	May 1, 1948	82½	84
Denver Gas and Electric Co.	Gen. (now 1st) 5s	Jan. 1, 1949	93½	94½
Detroit City Gas Co.	First 6s	July 1, 1947	99½	99⅞
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	100½	102
Hudson County Gas Co.	First 5s	Nov. 1, 1949	93⅜	95
Kansas City Gas Co.	First 6s	Feb. 1, 1942	100½	101¾
Laclede Gas Light Co.	Ref. & Ext. 5s	Nov. 1, 1934	90½	93¼
Laclede Gas Light Co.	First 5½s	Feb. 1, 1953	90	92
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	88	90
Milwaukee Gas Light Co.	First 4s	May 1, 1927	93¾	94⅛
Pacific Gas and Electric Co.	Gen. & Ref. 5s	Jan. 1, 1942	91¼	92
Pacific Gas and Electric Co.	First & Ref. 5½s	Dec. 1, 1952	97	98
Pacific Gas & Electric Co.	First & Ref. 6s	Dec. 1, 1941	102½	103½
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	•97	97⅜
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sep. 1, 1947	89	89¾
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	94	97
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	89	91
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	81	83
Southern California Gas Co.	First 6s	Nov. 1, 1950	97½	99
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	89	91½
Washington Gas Light Co.	General 5s	Nov. 1, 1960	93¾	94¼
Washington Gas Light Co.	Mtge. 6s	Apr. 1, 1933	99¼	100
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	87	90

To Issue Bonds

San Francisco, Cal.—The State Railroad Commission has authorized the Los Angeles Gas & Electric Corporation to issue $4,000,000 of its 5½ per cent general and refunding mortgage bonds, payable March 1, 1943, for financing in part construction expenditures for the year 1923.

Dividend Announcement

H. M. Byllesby & Co. announce that the board of directors of the Oklahoma Gas & Electric Company has declared the regular quarterly dividend of 1¾ per cent on the preferred stock, payable June 15, 1923, to stockholders of record May 31.

Indiana Gas Stock Sold

Indianapolis, Ind.—It was definitely announced that arrangements have been made by Randal Morgan, representing the United Gas Improvement Company of Philadelphia, and Samuel Insull by which the control of the Northern Indiana Gas & Electric Company passes from the Philadelphia owners to the Chicago interests represented by Mr. Insull, under whose management the Northern Indiana Gas & Electric business will be operated in the future. The United Gas Improvement Company will, however, remain interested in the property. The total annual business involved amounts to about $10,000,000.

Interests connected with the Commonwealth Edison Company of Chicago, the Peoples Gas Light and Coke Company of Chicago, the Public Service Company of Northern Illinois and the Middle West Utilities Company were represented by Mr. Insull.

Reports Yearly Earnings

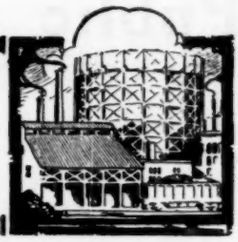
Spokane, Wash.—After paying all expense of operation and maintenance, and setting aside $38,561 in the replacement reserve, the Spokane Gas Company in the year ended April 30 had net earnings of $116,257, Manager Harry Warner reported to Mayor Fleming. The company's valuation as fixed by the State is around $1,200,000, making the net return during the year close to 10 per cent. The summary of the business for April and the twelve months ended with April 30 follows:

	April	12 Mo.
Earn'gs, domestic	$25,589	$359,058
Industrial earn'gs	12,564	147,538
T'tl gross earn'gs	41,082	511,788
Gross cost of coal	20,058	224,796
Less coke residue	9,680	108,605
" other residue	1,308	14,713
Net cost of coal..	9,070	101,477
T'tl cost coal gas	11,781	132,867
Cost water gas..	951	33,244
Purification and storage	2,952	38,690
T'tl produc. exp.	15,539	202,844
Distribution cost	1,747	19,805
Customer and office expense..	4,533	53,332
Miscellaneous operation & maintenance	7,016	80,988
Replacement res.	3,228	38,561
Total operation & maintenance	32,066	395,531
Net earn'gs from operation	9,016	116,257

Public Utilities' Property Valued

Marion, Ill.—Property of two Marion public utilities is included in the appraisement of the State Board of Tax Commissioners. The Central Indiana Gas Company holdings are valued at $4,117,000 as compared to $2,263,370 in 1922. The Indiana General Service Company is appraised at $5,407,470, as compared to $5,135,500 in 1922.

NEWS OF THE GAS INDUSTRY



No Rate Reduction for Kenosha

Kenosha, Wis.—There was little reason to believe that there would be any immediate reduction of rates for gas in Racine and Kenosha, following the meeting between the officials of the Wisconsin Gas & Electric Company and the city officials of Racine, held recently. The officials of the company contended that the reports of the company would show that earnings of the gas utility were still below the rates allowed by the railroad commission.

A substantial decrease in the price of coal was held to be the necessary factor before the company could make any voluntary reduction in the price charged for gas. The price for coal for the coming season has not as yet been made.

It is probable that other conferences in the matter will be held later on in the summer.

New Pumping Unit for Rochester

Rochester, N. Y.—Gas sufficient to prepare 16,000 dinners is consumed in Rochester during a single hour each Sunday, according to figures prepared by Joseph P. Haftenkamp, general superintendent of the Rochester Gas & Electric Corporation. In other words approximately 1,000,000 cubic feet is burned in the dinner-preparation hour of the Sabbath. This is equivalent to two burners on 1,600 gas ranges.

The hour of maximum gas consumption is continually changing and now often falls Sunday noon. Years ago the maximum consumption or peak load was reached Christmas Day, but a change came and for several years the maximum was reached in the canning season. Last March the peak shifted to that month, because so many were using gas for heating, and for days at a time the daily consumption ran more than 10,000,000 cubic feet a day. This was a 30 to 40 per cent increase over the previous maximum.

Now another shift has come, so the peak load falls Sunday.

The mounting consumption of gas in Rochester forced the company to buy a new pumping unit which will have a capacity of 750,000 cubic feet an hour against a five-pound pressure. This new pump has been ordered and will be established at the east station in the rear of the Bausch & Lomb plant. The cost of the unit is approximately $30,000.

There are at present three pumping units at the east station with capacities of 300,000, 500,000 and 750,000 cubic feet an hour. But the 300,000 cubic foot unit will be transferred to the holder in Blossom Road, when the new 750,000 unit is put at the east station. The holders at east station have a capacity of only 3,000,000 cubic feet so an hour on Sunday almost reduced their contents by half. The Blossom Road holder has a capacity of 6,000,000 cubic feet.

Offers First Mortgage

Hoboken, N. J.—A first mortgage 5 per cent bond of a gas company having excellent rating and a yield of more than 5¼ per cent around the present selling price of 93 is that of the Hudson County Gas Company, dated November 1 1899, and due November 1, 1949.

This company was incorporated in New Jersey in 1899 and leased to the Public Service Gas Company, whose entire stock is owned by the Public Service Corporation of New Jersey, for 900 years, at a rental equivalent to interest on the bonded debt and 8 per cent on capital stock, of which $10,500,000 is now outstanding.

The first mortgage 5s of the Hudson County Gas Company are secured by a first mortgage on plants supplying gas to Jersey City, Hoboken, Bayonne and other municipalities in Hudson county N. J., a population of 550,000 being served under a perpetual franchise. The bonds are listed on the New York and Dhiladelphia stock exchanges. The original market was in New York, where the bonds were offered at 105 and interest.

Director Named

Milwaukee, Wis.—Arthur H. Anger, vice-president of the Anger-Chevrolet Sales Company, has been named a director of the Milwaukee Gas Light Company, to succeed the late Dr. Nelson P. Hulst, according to R. B. Brown vice-president and general manager of the company. Other directors of the Milwaukee Gas Light Company are: R. B. Brown Ewald Haase, Guy Gregg, Sheldon Glass, L. J. Lindsay, F. W. Rogers and Edwin E. White, of Milwaukee, and Alanson P. Lathrop, New York.

Commercial Section Meeting of Empire State Gas & Elec. Assn.

The annual meeting of the Commercial section of the Empire State Gas & Electric Association will be held at Briarcliff Lodge, Briarcliff Manor, N. Y., on Thursday, June 28, and Friday, June 29.

The following is a tentative program of the meeting:

Thursday, June 28, 9:45 A. M. (Daylight Saving Time).

Appointment of nominating committee for officers of the section for the ensuing year.

Report of Chairman of Commercial Section.

Purchasing and Storeroom: A. H. Rhubart, Utica Gas & Electric Company; H. B. Cleveland, Elmira Water, Light & R. R. Co.

Merchandising: (a) Service—W F. Moses; Empire Gas & Electric Company; (b) Appliances—H. J. Taillie, Rochester Gas & Electric Corp.; (c) Street Lighting—W. C. Pearce, Syracuse Lighting Company.

Street Lighting Development (illustrated): A. B. O'Day, Edison Lamp Works, General Electric Company.

Merchandising Talk, Electric Domestic Appliances: George R Purvis, Hurley Machine Company Chicago.

Advertising: (a) Appliance—A D. Dudley, Syracuse Lighting Company; F. M. Houston, Elmira Water, Light & R. R. Co.; K. C. Ogden, Westchester Lighting Company; (b) Service and Goodwill—F. M. Houston, Elmira Water Light & R. R. Co.; R. F. McGuinness, Utica Gas & Electric Company; J. W. Green, Westchester Lighting Company.

Public Relations: M. S. Sloan president Brooklyn Edison Company.

Friday, June 29, 9:30 A. M. (Daylight Saving Time).

Service Inquiries and Routine Investigation of: (a) High Bills, R W. Manier, Binghamton Gas Works; (b) Extension A. Scarth Empire Gas & Electric Company

Rural Service: Bert H. Shepard consulting engineer.

Industrial Engineering: (a) Commercial, B. R. Armitage, Empire Gas & Electric Co.; (b) Factory, Ralph C. Smith, Empire Gas & Electric Co.; (c) Domestic, Arthur T. Fay, Utica Gas & Electric Co.; J. B. Allington, House Heating, Rochester Gas & Electric Corp.; R. B. Howes, The House Heating Load, Consolidated Gas Company of N. Y.

Refrigeration (illustrated): S. A Bennis, United Electric Light & Power Company; L. S. Smith Rochester Gas & Electric Corporation; J. G. DeRemer, Savage Arms Corporation.

Commercial Department Accounting: H. B. Cleveland, Elmira Water, Light & Power Company: Ernest Johnson. Syracuse Lighting Company.

Service of the Utility Company from the Viewpoint of an Outsider: H. W. Bell, Utica Savings Bank.

Election of officers of the section for the ensuing year.

University of Michigan Announces Engineering Course

The University of Michigan, Ann Arbor, Mich., has announced recently a course in Chemical Engineering and Graduate Courses in General Chemical Engineering, Metallurgical Engineering, Gas Engineering and Organic Chemical Industries.

They have improved facilities for these courses in the new east engineering building, which will be ready for occupancy next fall, and which contains one of the best chemical engineering laboratories in the United States.

In the booklet describing the courses the following is said of the Gas Engineering group:

"The development of the interest in gas engineering at the University of Michigan is due largely to the encouragement of the Michigan State Gas Association, which established a fellowship in Gas Engineering in 1900 and maintained it constantly until the war. Since gas manufacture and combustion processes are both chemical operations, it is apparent that the course in Chemical Engineering should offer the best foundation on which to build the specialized courses needed by the gas engineer. The undergraduate courses required of all chemical engineering students include a study of building materials, fuel and its utilization, gas and fuel analysis, including calorimetry, and a brief treatment of the manufacture of illuminating gas as a part of the course in Technology of Organic Compounds. Opportunity is offered in the graduate courses of the Gas Engineering group to make a more detailed study of gas manufacture and Chemical Engineering; gas engines, power plants and the valuation of public utilties in the department of Mechanical Engineering; electrical distribution and illumination in the department of Electrical Engineering; and business organization and management in the department of Economics.

The demand for men by the gas industries is a steady one and there is every prospect that this industry will expand rapidly in the next decade."

Albany Council Prohibits New Holder

Five hundred persons packed the Common Council chamber at the City Hall while the Aldermen adopted unanimously an ordinance introduced by Alderman William H. Smith, of the Ninth Ward, and fostered by the North End Improvement Association, prohibiting the Municipal Gas Company from building an additional gas holder in the North End or anywhere else within the city limits.

Passage followed a two-hour hearing. All of the speakers, with the exception of George W. Van Slyke, president of the Chamber of Commerce, and Neile F. Towner, attorney for the Municipal Gas Company, favored passage.

"If you pass this ordinance," Mr. Towner said, "and we cannot build another holder in the industrial section of Albany, where are we going to build? The town of Colonie will not let us put a gas holder in that town because Albanians do not want one. Bethlehem and Guilderland will feel the same way about it, so where will we go? You cannot build an industrial plant requiring gas because we cannot supply it. This city will go back because business will be stagnant.

"Ten years ago this town was a joke, but it has been going forward. It now has a population of 120,000, and in five years will have 200,000. If you pass this ordinance you are going to say to every man who wants to erect a house that he must not build because no more gas holders will be permitted in the city of Albany."

Michael F. Conners, president of the North End Improvement Association, led those who favored the ordinance, terming the proposed tank as "unsightly, unsafe and unsanitary."

William S. Ronan, vice-president of the association, rapped the Chamber of Commerce. "It wants a city beautiful," he said, "yet it favors this gas holder for the North End. We protest against this gas holder on the ground that it is a menace to health, life and property."

Police Justice John J. Brady favoring the passage of the ordinance, said: "We are asking you to do something that is only fair and

right. We of the North End love our section and we do not want any more dangers added."

The seventeen out of nineteen elected members of the Council present voted unanimously to pass the ordinance.

Legal authorities are of the opinion that the ordinance is in direct conflict with Section 1 of Article 14 of the United States Constitution.

Unfortunately, a constitutional test will consume months of time and in the interval the city of Albany will be handicapped in securing an adequate supply of gas for its new homes and manufacturing plants.

California Commission Settles Franchise Dispute

Los Angeles, Cal.—A public utility holding a franchise in a given territory is entitled to continue in that territory, even though it may later be annexed by a city exclusively served by a rival, according to a decision made recently by the California State Railroad Commission. The Los Angeles Gas & Electric Corporation, serving the city of Inglewood, complained to the Commission that the Southern California Gas Company was infringing on its territory, it having an exclusive franchise from the municipality.

The Commission found that Inglewood had annexed adjoining sub-divisions, previously served by the Southern California Gas Company, which continued to supply its consumers. It holds that the Southern California Company cannot be compelled to withdraw, and fixes a dividing line, over which the rival utilties may not cross unless either should refuse to make service connections to prospective consumers.

The Southern California Gas Company is ordered not to serve the city north of Manchester avenue nor west of Cypress avenue and the Los Angeles Gas & Electric Corporation must not cross in the other direction.

Washington, Pa., Contracts for Holder

The Henry L. Doherty & Co., at Washington, Pa., has awarded a contract for a 200,000 cu. ft. capacity two lift gas holder to the Stacey Manufacturing Company of Cincinnati, Ohio.

City to Advertise for Bids for Gas

Okmulgee, Okla.—A resolution authorizing the city clerk to advertise for bids on a contract to furnish the city with gas for fuel at the city water plant will be considered and probably passed at the regular meeting of the Board of City Commissioners. The city water plant uses an average of 140,000 feet of gas a day and is paying under the present contract which expires this month 22 cents a thousand cubic feet. The successful bidder on the new gas contract will be required to furnish a bond of $10,000 for faithful performance of the contract. The city water plant is equipped to use gas, coal, crude oil or electricity so that there is practically no chance of the plant ever being forced to shut down because of a shortage of any particular supply of fuel.

Visited Gas Plant

Waterbury, Conn.—Gas, that very common necessity in nearly every home, was thoroughly explained both as to its composition and manufacture, to the students of the graduating class of Leavenworth vocational high school on Friday afternoon, when they visited the gas plant of the Waterbury Gas Light Company on Jackson street and received a very thorough course of instruction in the actual manufacture of the gas its various divisions and the methods used to obtain it, from the process of transforming the raw materials into gas, enriching it with coal oil and developing it into gas for home use.

Holds Dinner Meeting of Superintendents

Utica, N. Y.—Superintendents of the Utica Gas & Electric Company heard Frank B. Steele, vice-president and general manager, outline the year's program of plant improvements and service extensions at a dinner-meeting in the Auditorium, 406 Lafayette street, recently.

Dinner was served 47 men, during which there was community singing.

Two films were enjoyed. A Bray comedy was followed by "Around the Clock by Gas," a picture descriptive of the manufacture and distribution of gas, together with its application in the home and industrial plants.

A talk on "The Manufacture of Gas" was given by W. J. Cahill. He touched upon the history, manufacture and application of gas. Lantern slides showing the various pieces of machinery used in manufacture were projected and each was accompanied by a detailed description of the part it played in the production of the commodity

Announcement

The Winchester Gas and Electric Light Company, Winchester Virginia, has advised the American Gas Association that it has no connection any longer with the American Gas Improvement Company.

It further states that the American Gas Improvement Company has no interest, financial or otherwise, in the Winchester Gas and Electric Light Company.

Improved Operating Conditions Make Rate Reduction Possible

The Wisconsin Valley Electric Company, Stevens Point, Wis., has voluntarily reduced its gas rates an average of $0.13 per M cubic feet, the new rate becoming effective June 1, 1923. The company has within the past two or three years expended $150,000 in plant and distribution improvements and the reduction has been made possible on account of improved operating conditions. The new rates are:

	Gross	Net
First 400 cu. ft. consumed per mo.	$1.10	$1.00 M
Next 1,600 cu. ft. consumed per mo.	2.10	2.00 M
Next 8,000 cu. ft. consumed per mo.	1.90	1.80 M
Next 20,000 cu. ft. consumed per mo.	1.60	1.50 M
Over 30,000 cu. ft. consumed per mo.	1.30	1.20 M

Minimum monthly bill, $1.00.

Awards Contract for New Equipment

The Jacksonville Gas Company of Jacksonville, Florida, has placed contract with the Gas Machinery Company of Cleveland, Ohio, for two complete bench fillings of inclined sixes from the ash pan up.

The contract also includes auxiliary materials for putting the balance of the benches in first class condition.

Reduced Gas Rates

Wilkes Barre, Pa.—The new schedule of reduced gas rates which was recently agreed upon by Luzerne County Gas & Electric Company and officers of the Public Welfare Association of the West Side and Nanticoke, will become effective at once, it was officially announced by the company. The compromise rates represent a considerable saving as compared with the tariff recently approved by the public service commission. An allowance of 5 cents per thousand feet will be made on all bills paid within ten days and a minimum charge of $1 per thousand cubic feet will be levied. Statements of bills in accordance with the 1918 rates of $2.10 per thousand will be mailed on Saturday to all consumers who have not paid their 1920 rates or their bills since that time Orders will also be sent out to all consumers who have paid their bills showing the amount of refund to be paid to them upon presentation of the order to the cashier of the company. The rates, which became effective are as follows:

First 10,000 cubic feet consumed per month at 21.5 cents per 100 cubic feet.

Next 10,000 cubic feet consumed per month at 20.5 cents per 100 cubic feet.

Next 10,000 cubic feet consumed per month at 19.5 cents per 100 cubic feet.

Next 10,000 cubic feet consumed per month at 18.5 cents per 100 cubic feet.

Next 60,000 cubic feet consumed per month at 17.5 cents per 100 cubic feet.

Next 100,000 cubic feet consumed per month at 17 cents per 100 cubic feet.

All over 200,000 cubic feet consumed per month at 16.5 cents per 100 cubic feet.

Stocking Up Coal Supply

Rochester, N. Y.—The Rochester Gas & Electric Corporation is not going to be caught napping as far as the coal situation is concerned. The purchasing agent of the company is busy stocking up gas coal for the coming winter. Already there are 35,000 tons in the company's bins at the gas-making station, according to Herman Russell, general manager of the company, and it is hoped that there will be 50,000 tons by August. This will be about three months 'supply.

The company uses no anthracite and August 31, the date when the anthracite operators' agreement with the mine owners expires, is not dreaded as far as anthracite itself is concerned, Mr. Russell pointed out. It does concern the company, however, in so far as trouble in the anthracite fields is reflected in the curtailment of the soft coal supply. It is in anticipation of trouble of this sort that the company is now stocking up with soft coal for gas-making purposes. Soft coal prices are slightly lower this season than they have been in the past, although the contract prices on March 1 were higher than they were last year at the same time.

Rail Board Fixes Florence Gas Rate

Columbia, S. C.—The South Carolina Railroad Commission Thursday issued an order fixing the gas rate for the city of Florence at $2.05 per thousand cubic feet, flat. This is an entirely new rate and is five cents higher than the old rate which was $2 flat. The new rate took effect June 1.

Attending a hearing before the commission Wednesday were Marion D. Lucas, president of the Florence Gas & Fuel Company; Samuel W. Brown, secretary of this company; W. M. Waters Mayor of Florence; B. S. Meeks member of the Florence City Council; S. I. Sulzbacher, member of City Council, and James M Lynch, Florence city attorney.

New Rates Effective

Cleveland, Ohio—Householders will be billed at new natural gas rates, starting July 20, R. W. Gallagher, vice-president and general manager of the East Ohio Gas Co. said.

Gallagher also announced that the company would push extensions when the settlement ordinance passed by the City Council becomes effective.

The new rates run from 45 cents to $1 a thousand cubic feet, with a charge of 50 cents a month, regardless of the amount of gas used A charge of $1 for turning on gas after it has been shut off in a house is also allowed.

Plan Better Gas Service

Grand Rapids, Mich.—To extend well regulated service to the ends of rapidly growing sections of the city, the Grand Rapids Gas Light Company has petitioned the City Commission for permission to instal four concrete manholes for gas main governors. These governors, it is proposed, shall be at the southeast corners of Wealthy street and Union avenue, the southwest corner of Hall street and Cass avenue, the northwest corner of Front avenue and Bridge street, and at the intersection of Fulton street and Front and Scribner avenues.

Proposed Merger of Gas Companies

Chester, Pa.—A big merger of gas and electric companies of Pennsylvania is in contemplation. in fact an application has been made to the Public Service Commission of the Commonwealth, under the provisions of the Public Service Law, to obtain the commission's approval of the merger and consolidation of the following companies:

Philadelphia Suburban Gas and Electric Company, East Pennsylvania Gas & Electric Company. Buck's County Electric Company. Towamencin Electric Company Plumstead Township Buck's Electric Company, Dublin Boro Buck's Electric Company, and Bedminster Township Buck's Electric Company.

The companies are to be taken over by the Philadelphia Gas & Electric Company.

Changes in Organization Announced

The United States Cast Iron Pipe and Foundry Company, Burlington, N. J., announce the following changes in their organization, to be effective July 1:

Mr. D. B. Stokes, formerly Western sales manager, is to be general sales manager, with offices in the Morris building, Philadelphia, Pa.

Mr. W. G. Savage, formerly Eastern sales manager, is to be Western sales manager, with offices in the Peoples Gas building Chicago, Ill.

Mr. C. E. Braun is appointed assistant Western sales manager with headquarters in Chicago, Ill.

Rochester Official Gives Reasons Why Reduction in Rate Is Unwarranted

Rochester, N. Y.—A reduction in the price of gas in Rochester is wholly unwarranted at this time Herman Russell, vice-president and general manager of the Rochester Gas & Electric Corporation said June 5, at a hearing before Public Service Commissioner Charles R. Van Voorhis on the city's application for a reduction in the gas price. The present rate is $1.05 a thousand cubic feet.

Mr. Russell said the oil market is unsettled and the gas corporation has been advised by the Standard Oil Company to delay purchasing in large quantity at the present high price. The cost situation also is disturbed. Pointing out the fact that the anthracite coal miners' agreement expires August 31, he asserted another strike in the industry is possible this fall. The rush to buy available anthracite in the event of a strike would drive bituminous prices up and make it scarce, he said. As it is prices for coal are now very high Mr. Russell asserted.

Gas prices are now lower in Rochester than in other cities of the State, Mr. Russell said, and this is brought about by the extensive sale of coke, on which there is considerable profit. Gas coal is exceptionally high now, he said because of the heavy demands made by the steel industry on the supply.

Ernest C. Scobell, auditor for the corporation, said the present rate was barely enough to provide for the 8 per cent return on the company's investment. Had the present rate been in effect all of 1922 he said, the corporation would have fallen short by $107,490 of making the 8 per cent return.

Corporation Counsel Charles L. Pierce questioned Mr. Scobell in an effort to show the company's valuation is inflated. Mr. Scobell said 7½ per cent of the valuation is in intangibles and the valuation on which the rate is based is around $10.000,000.

Messrs. Russell and Scobell and Daniel M. Beach, attorney for the corporation, argued the present rate of $1.05 per thousand cubic feet has been in effect only four months, and at least six months are necessary to determine if the rate be reasonable and sufficient for a proper return. Commissioner Van Voorhis agreed to delay proceedings until late in July, and in the meantime Mr. Pierce will go over the figures presented by the company. The Public Service Commission will fix the date of the next hearing.

Appointed Assistant Treasurer

John R. Fenniman, former director of the preferred stock division of the Consolidated Gas Company of New York, has been appointed assistant treasurer of the company to fill the vacancy in that position left by the death of Hugo Reinach. Mr. Fenniman has been director of the preferred stock division since January and was previously superintendent at various times of two of the company's branch offices.

More Gas Mains

Newark, N. J.—Sixty miles, or about 3,500 tons, of new gas pipe have been ordered by Public Service Gas Company for delivery August 1. This supply will be turned over to the distribution department so that there be no delay in laying new mains in those districts where new or increased service is demanded. The mains will be four, six and eight inch.

W. D. Birbeck Joins Stacey Mfg Company

W. D. Birbeck has recently joined the engineering and sales department of the Stacey Manufacturing Company, Cincinnati, Ohio. He has been connected with the gas industry for the past thirty years, having been associated with the Kerr-Murray Mfg. Co., Runyan & Ryall, Western Gas Construction Company, and for the past four years with the Russell Engineering Company.

Personal Notes

James E. Maddock has resigned from the bond department of H M. Byllesby & Co., Chicago, to become vice-president and general manager of the Texas Tile & Fire Brick Company, in which he has acquired a substantial interest. His headquarters will be in San Antonio.

Mord M. Bogie has been made Kansas City representative of H M. Byllesby & Co. temporarily succeeding R. S. Bogie, his father who died recently. The office will remain at 604 Victor building.

B. F. Sturtevant Co. to Have Western Plant

Owing to increasing business and the desire to be of still greater service to its customers, the B. F. Sturtevant Company, Hyde Park Boston, Mass., has long felt the need of a manufacturing plant in the Middle West.

As almost every installation calls for specific engineering, it has been found difficult and expensive at times to give full attention to this westward business from Hyde Park; therefore, the Sturtevant Company has purchased the plant of the Wisconsin Engine Co., makers of Corliss Pumping Engines, at Corliss, Wisconsin.

This new acquisition covers nearly ten acres and the buildings have approximately 150,000 feet of floor space.

A full manufacturing and engineering staff will be maintained and closer co-operation given to western customers. Shipping raw material East and the finished product West adds a good deal to the ultimate cost because of freight charge. The situation at Corliss will make a substantial reduction in these transportation costs.

The new plant will be under the same direction as the other factories at Hyde Park, Galt, San Francisco and Philadelphia, with ex-Governor Foss as president.

Mr. Harry W. Page has been selected as general manager and will be in entire charge of the Wisconsin plant.

Mr. Page is a graduate of Baraboo High School and also of the University of Wisconsin. For the past six years he was assistant general manager and was located at the main office of the B. F. Sturtevant Co., at Hyde Park, Boston Mass.

To Spend One-Quarter Million Dollars on Construction

Fort Wayne, Ind.—Anticipating the needs of a city of 150,000 inhabitants within not to exceed ten years' time, the Northern Indiana Gas & Electric Company will expend a quarter of a million dollars on new construction in Fort Wayne this year, S. E. Mulholland, president of the company, announced.

In making the above announcement, Mr. Mulholland said that he visioned a city easily half again larger than Fort Wayne of today in even less than the next ten

years, that utilities necessarily and peculiarly must vision and anticipate the future growth of cities and that while other industries may lag behind for a time, but that proper functioning utilities must build to face the future growth when and as it comes.

"Our 1923 program," said Mr. Mulholland, "includes installation of nearly a mile and a half of main trunk line system of 16-inch pipe to extend from the plant at Barr and Superior streets, south the entire length of Barr street, across to Lafayette and under the new subway track elevation on to Creighton avenue, where it will tie in with the main distributing arteries already provided.

"While the laying of this supply trunk main might have been postponed a year or two, the company is of the opinion that the best service can only be given by the investment being made at the present time, and also has in mind the desirability of the completion of the improvement at the same time that the railroad grade separation of tracks is being carried on. This trunk wall is in a large sense a development brought about by the International Harvester plant. The estimated cost of this line will be close to $75,000.

"The works equipment covering the development planned or under way includes a scrubber condenser, gas booster and miscellaneous items costing $75,000. In addition to this, there is a greater demand this year for gas mains for territory that is not already taken care of, also for new additions that are being opened up by real estate and various development companies.

Expending $20,000 for Plant Betterment

Cheyenne, Wyo.—Installation of new equipment at the plant, construction of a number of blocks of new "tie-in" mains, and other betterments of the system, all to the end of bringing about an immediate improvement in gas service has been begun by the Cheyenne Light, Fuel & Power Company, and will be completed by July 1. With the replacement of service pipes, connecting mains and consumers' properties on the streets to be paved, the company's improvement program for the next few months, according to Manager J. G. Keegan, contemplates the expenditure of approximately $21,500.

The most important installation at the plant is a gas bench, or generator, of the most modern type to cost $10,000. It will replace a bench that has been in operation for a number of years, and will increase the generating capacity of the plant from 33 to 40 per cent bringing the total possible production of the plant to about 200,000 cubic feet of gas per day.

In addition to improvements already made in coal and ash-handling facilities at the plant, the company is preparing to make certain trackage changes which will reduce the time required for unloading coal and the return of cars to the railroads.

Syracuse to Have New Boiler Plant

The U. G. I. Contracting Company of Philadelphia has received contract for the furnishing and installing of new boiler plant of 150 H. P. for the Syracuse Lighting Company.

The Syracuse Lighting Company has also awarded contract to the U. G. I. Contracting Company for extensive street main laying.

New Installations in Indiana

The Northern Indiana Gas & Electric Company has awarded contract to the U. G. I. Contracting Company, Philadelphia, for the installation of an additional waste heat boiler and a water softening system at the South Bend plant The same company has been awarded contract to install new generators at the Peru (Ind.) plant.

Gas Service Charge Gone, Company Will Seek Rate Raise

Fulton, N. Y.—Because Governor Smith signed the Miller-O'Brien bill Saturday, prohibiting public service corporations in this State from collecting a service charge on gas meters on or after June 4, the Fulton County Gas & Electric Company, according to L. C. Smith, general manager, today took steps to petition the Public Service Commission to increase its rates for gas to cover the loss in revenue resulting from the enactment of the bill.

Mr. Smith was unable to say to what price gas would rise, because the company's accountants have not finished their reckonings, upon which the increase will be based.

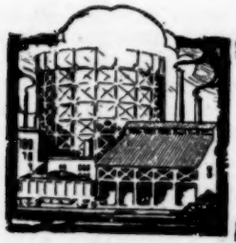
At present the company is charging $1.45 per 1,000 cubic feet of gas, in addition to a service charge of 40 cents. This price is effective on the first 5,000 cubic feet of gas used. Thereafter it is slightly less.

Clarence L. Kirk Elected General Manager

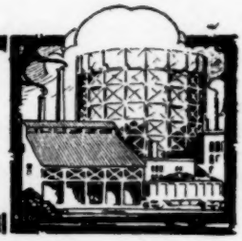
Indianapolis, Ind.—Clarence L. Kirk was elected general manager and secretary of the Citizens Gas Company at a meeting of the board of directors, the election effective June 1. The directors some time ago chose him to be executive head of the company, but did not designate his position. At the meeting the directors also adopted a resolution asking the directors of the Milburn By-Products Coal Company to elect Mr. Kirk president of that company. The coal company is owned by the Citizens Gas Company and directors of the coal company are directors of the Citizens Gas Company. Mr. Kirk will succeed James W. Dunbar of New Albany as a director of the coal company, as he succeeded him as a director of the gas company Mr. Dunbar having resigned because of illness.

Election of other officers of the gas company has been postponed. The directors, it was said by one of them, did not discuss new policies, and will await recommendations from Mr. Kirk, the new general manager. It was also said that J. Dorsey Forrest, who has been executive head of the company, will not sever his connection with the company completely until July 1.

At a meeting of the board of directors of the gas company, resolutions were adopted commending the work of J. Dorsey Forrest, who is succeeded by Mr. Kirk.



With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Journal

Somervell Gasoline Hammer Drill

A gasoline impact drill of the air hammer type is now manufactured by the Pennsylvania Gasoline Drill Company, Land Title Building, Philadelphia, Pa.

This drilling unit is an epoch in the drilling equipments now in practical use, it being a self-contained, portable, gasoline hammer, so powerful and compact that one man operates and transports it from place to place. It makes its own power, therefore no other power equipment has to be transported with it.

When first seen in operation, the lack of connection to other agency of power causes wonder and forcefully brings a realization of the terrific power of gasoline when applied directly to the hammer piston of this drill.

This Somervell gasoline hammer drill was first developed for drilling rock, but, because of its portability and simplicity, the advantages of its application to other work are recognized in many other lines of active business.

The drill weighs only 70 pounds, is operated by one man and consumes but 1½ gallons of gasoline per day.

In various tests made over a period of several weeks, particular attention was paid to the performance of the gasoline hammer in such work as cutting asphalt, breaking concrete bases, picking frozen earth and tamping backfill.

For ramming backfill a cast steel tamper 8½x8½ inches is used. The backfill is so solidly compacted by the gasoline hammer that after the installation of a service conduit 4½ inches square for the length of the ditch, it was found possible to replace all of the earth removed, thus insuring a more substantial foundation than existed before being disturbed. This precludes the possibility of future settlement as well as eliminating the cost of removal of surplus dirt.

The mechanical principle of this gasoline hammer drill combines the action of an air hammer and a gasoline engine in such manner the drilling unit has but two moving parts, the hammer piston and the

flywheel assembly. No crankshaft or connecting rod is employed, and there is no spring or other yielding member used in the internal construction. No inlet or exhaust valves or cam shafts are used, as the air and gas passages are fixed ports cut through the solid steel of the cylinder.

The down or power strokes of the hammer piston are made with approximately 900 pounds of gasoline explosive force thrusting it forward to hit the drill bit with terrific force. The flywheel is employed only to return the hammer piston on the upward or compression strokes. Approximately 1,800 impacts are struck each minute. For carburation, a gasoline mixing valve is used which permits the drill to be worked at any angle. While the drill continues to run at full speed, the operator shifts it from one position to another and to any desired angle without affecting its operation. To start the drill, the operator has but to give the rim of the flywheel a pull by hand.

"Salamac" for Cleaning Meters

A large saving is being effected by a number of the important gas and meter companies by using salamac instead of the ordinary lump sal ammoniac. Salamac is practically muriate of ammonia pressed into bars of two sizes—full bars, about 8x1¾x1¾ inches, weighing about 18 ounces; half bars, about 8x1¾x¾ inches weighing about 9 ounces.

These bars can be easily cut to fit the machine holders without waste. Owing to the saving of time, labor and waste, salamac should appeal strongly to the employer from the standpoint of economy. Moreover, the workmen appreciate its convenience in handling, etc.

The North River Chemical Corporation, 90 West street, New York, is supplying this specialty to the trade, and will furnish samples and information on request.

Lambert Meter Company Increases Plant Facilities

The above company has taken additional space in the Bush Terminal Building, Brooklyn, N. Y., in order to take care of increased business, and also to provide facilities for the manufacture of a new ten-light meter. With this additional equipment orders can be handled more promptly.